

## MEMORANDUM OF UNDERSTANDING

THIS MEMORANDUM OF UNDERSTANDING IS MADE AND ENTERED INTO THIS THIRTEENTH DAY OF OCTOBER: 1993 BETWEEN THE INDIANA DEPARTMENT OF TRANSPORTATION (INDOT), THE INDIANA DEPARTMENT OF NATURAL RESOURCES (IDNR), THE INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (IDEM) AND THE U. S. FISH AND WILDLIFE SERVICE (USFWS) FOR THE PURPOSE OF DELINEATING GUIDELINES FOR CONSTRUCTION OF TRANSPORTATION PROJECTS IN KARST REGIONS OF THE STATE.

WHEREAS, INDOT, IDNR, IDEM AND THE USFWS WISH TO COOPERATE IN THE IDENTIFICATION, STUDY AND TREATMENT OF DRAINAGE IN KARST REGIONS RELATED TO THE CONSTRUCTION OF TRANSPORTATION PROJECTS AND,

WHEREAS, INDOT, IDNR, IDEM AND THE USFWS ACCEPT RESPONSIBILITY TO ENSURE THE TRANSPORTATION NEEDS OF INDIANA ARE MET IN AN ENVIRONMENTALLY SENSITIVE MANNER THAT PROTECTS THE HABITAT OF ALL SPECIES AND,

WHEREAS, DESIGN AND CONSTRUCTION PRACTICES MUST PROTECT GROUND WATER QUALITY, PUBLIC HEALTH AND SAFETY, AND THE ENVIRONMENT.

WHEREAS, IDNR WILL CONFORM TO THE TERMS AND CONDITIONS OF THIS MOU ON THEIR TRANSPORTATION PROJECTS. LIKEWISE, IT WILL BE IDNR'S RESPONSIBILITY TO PROVIDE STANDARD BIOLOGICAL REVIEW FOR PROJECTS IN THE KARST REGION.

THEREFORE, IN CONSIDERATION OF THE TERMS AND CONDITIONS SET FORTH HEREIN THE INDOT, IDNR, IDEM, AND USFWS AGREE AS FOLLOWS:

1. INDOT IN COOPERATION WITH THE IDNR, IDEM AND USFWS SHALL DETERMINE THE LOCATION OF SINKHOLES, CAVES, UNDERGROUND STREAMS, AND OTHER RELATED KARST FEATURES AND THEIR RELATIONSHIP PRIOR TO PROPOSED ALTERATIONS OR CONSTRUCTION IN KARST REGIONS OF THE STATE. A CONSULTANT WITH EXPERTISE IN KARST GEOLOGY/HYDROLOGY MAY ASSIST IN THE IDENTIFICATION AND CHARACTERIZATION OF THE KARST FEATURES. THE CHOICE OF THE CONSULTANT RETAINED BY INDOT WILL BE SUBJECT TO THE REVIEW OF IDNR, USFWS AND IDEM.

2. TASKS TO ACCOMPLISH THIS WORK WILL INCLUDE:

RESEARCH AVAILABLE FROM PUBLIC AND PRIVATE SOURCES FOR INFORMATION RELATIVE TO KARST FEATURES.

FIELD CHECK KARST AND CAVE FEATURES THAT APPEAR FROM THE FIRST TASK AND IDENTIFY ANY ADDITIONAL KARST FEATURES.

PREPARE A DRAFT REPORT, WITH PHOTOGRAPHS AND MAPS, DRAINAGE AREAS, AND LAND USE OF THAT DRAINAGE AREA FOR EACH SINKHOLE OR KARST

FEATURE. DYE-TRACING AND/OR OTHER GEOTECHNICAL INFORMATION TO DETERMINE SUBSURFACE FLOW OF WATER IN THE PROJECT AREA AND SURFACE WATER DRAINAGE PATTERNS OF THE AREA. CALCULATIONS OF ESTIMATES OF ANNUAL POLLUTANT LOADS FROM THE HIGHWAY AND DRAINAGE WITHIN THE RIGHT-OF-WAY WILL BE MADE, INCLUDING PRIOR TO, DURING AND POST CONSTRUCTION ESTIMATES. THE DESIGN OF THE TREATMENT OF THE KARST FEATURES WILL TAKE INTO CONSIDERATION TREATMENTS NECESSARY TO MEET THE STANDARDS OF THE MONITORING AND MAINTENANCE PLAN.

THAT REPORT WILL BE USED AS A TOOL TO ASSIST IN DETERMINING THE PROPOSED HIGHWAY ALIGNMENT. THE INTENT OF INDOT IS TO AVOID KARST AREAS AND USE ALTERNATE DRAINAGE WHERE POSSIBLE.

3. IDNR, IDEM AND USFWS WILL BE REQUESTED TO REVIEW AND COMMENT ON THE FINDINGS AT THE EARLY COORDINATION PHASE OF PROJECT DEVELOPMENT.

4. INDOT, USING THE INPUT FROM IDNR, IDEM, AND USFWS WILL BEGIN TO FORMULATE APPROPRIATE MEASURES TO OFFSET UNAVOIDABLE IMPACTS TO THE KARST FEATURES. IT IS UNDERSTOOD BY ALL PARTIES THAT SOME OF THE METHODS PROPOSED AT THIS TIME WILL BE GENERIC AND COULD BE APPLIED THROUGHOUT THE LENGTH OF THE CORRIDOR. OTHER METHODS MAY BE SPECIFIC TO A PARTICULAR CAVE OR KARST FEATURE. SOME OF THE APPROACHES MAY REQUIRE ADDITIONAL INVESTIGATIONS TO DETERMINE THEIR NECESSITY AND/OR THEIR FEASIBILITY. A REVISED DRAFT REPORT WILL BE PREPARED BY INDOT'S CONSULTANT AND PROVIDED TO THE IDNR, IDEM, AND THE USFWS AS PART OF THE DESIGN REVIEW PROCESS.

5. DRAINAGE ENTERING FROM BEYOND THE RIGHT-OF-WAY WILL BE TREATED ACCORDING TO THE SAME PROCESS AS DRAINAGE GENERATED BY THE PROJECT.

6. AS THE PROJECT PROGRESSES FURTHER INTO THE DESIGN PHASE, THE IDNR, IDEM AND USFWS WILL BE INVITED AND WILL ATTEND FIELD CHECKS AND MEETINGS DEALING WITH EFFORTS TO NEGATE OR MINIMIZE ADVERSE IMPACTS.

7. HAZARDOUS MATERIALS TRAPS (HMT'S) WILL BE CONSTRUCTED AT STORMWATER OUTFALLS AND OTHER LOCATIONS THAT WILL PROTECT KARST FEATURES FROM SPILL CONTAMINATION.

8. INDOT AGREES TO DEVELOP A MONITORING AND MAINTENANCE PLAN FOR THE AFFECTED KARST FEATURES. IDNR, IDEM AND USFWS WILL BE PROVIDED AN OPPORTUNITY TO REVIEW THIS PLAN. THE ESTABLISHMENT OF WATER QUALITY AND A POINT AT WHICH A STANDARD IS ESTABLISHED FOR REMEDIATION WILL BE A PART OF EACH MONITORING PLAN. THE RESULTS OF THE MONITORING WILL BE SUBMITTED TO IDNR, USFWS, AND IDEM ON A REGULAR BASIS.

9. A LOW SALT, AND NO SPRAY STRATEGY WILL BE DEVELOPED FOR EACH FUTURE PROJECT. A SIGNING STRATEGY FOR THESE ITEMS WILL ALSO BE DEVELOPED FOR EACH PROJECT.

10. PRIOR TO ACCEPTANCE OF THE FINAL DESIGN PLANS AN AGREEMENT WILL BE DEVELOPED WHICH WILL SET OUT THE APPROPRIATE AND PRACTICABLE MEASURES TO OFFSET UNAVOIDABLE IMPACTS TO KARST FEATURES. THIS AGREEMENT WILL BE SIGNED BY THE DEPARTMENT DIRECTOR OF IDNR, THE COMMISSIONER OF THE IDEM, THE COMMISSIONER OF INDOT AND THE SUPERVISOR OF THE USFWS BLOOMINGTON INDIANA FIELD OFFICE. THE AGREEMENT WILL BECOME A PART OF THE CONTRACT DOCUMENTS FOR THE PROJECT, WILL BE

DISCUSSED AT THE PRE-CONSTRUCTION CONFERENCE AND WILL BE ON FILE AT THE OFFICE OF THE PROJECT ADMINISTRATOR.

11. INDOT WILL ASSURE THAT THE TERMS OF THE AGREEMENT WILL BE COMPLETED WITH ALL SAFEGUARDS GIVEN TO THE KARST AREA. SPECIAL PROVISIONS, WHICH ARE BINDING PROVISIONS THAT ARE A PART OF THE CONTRACT, WILL BE INCLUDED OUTLINING THE PRECAUTIONS TO BE TAKEN. CONSTRUCTION AND DESIGN STRATEGIES FOR HANDLING KARST FEATURES WILL BE DISCUSSED WITH THE CONTRACTOR(S) AND PROJECT ADMINISTRATOR DURING THE PRECONSTRUCTION CONFERENCE. PROJECT ADMINISTRATOR SHALL ENSURE THAT THE CONTRACTOR IS FOLLOWING THE NEW EROSION CONTROL STANDARDS THAT MEET RULE 5 OF 327 IAC 15 AND ANY SPECIAL PRECAUTIONS OUTLINED IN THE DESIGN PLANS THAT THE SINKHOLE TREATMENT IS BEING HANDLED CORRECTLY. THE EROSION CONTROL PLAN MUST BE AVAILABLE AT THE PROJECT ADMINISTRATOR'S OFFICE. AN EMERGENCY RESPONSE PLAN WILL BE MADE A PART OF THE CONTRACT DOCUMENTS. IN ADDITION, THE CONTRACT DOCUMENTS WILL CONTAIN A STRATEGY FOR SIGNING TO ALERT THE PUBLIC TO THE FACT THAT ALL TYPES OF SPILLS ARE POTENTIALLY HAZARDOUS TO THE KARST ENVIRONMENT. FOR INDOT. THIS PLAN WOULD BE PROCEDURE 20 OF THE FIELD OPERATIONS MANUAL DATED 6/24/92 (ATTACHED).

12. THE LOCATION AND NATURE OF THE SINKHOLES AND DRAINAGE SCHEMATIC WILL BE PROVIDED TO THE IDEM. THEY WILL PROVIDE THE INFORMATION TO THE APPROPRIATE LOCAL AUTHORITIES AND THE HAZMAT TEAMS. AN EMERGENCY RESPONSE PLAN WILL BE FOLLOWED. THIS CONSTITUTES PROCEDURE 20. INCLUDED IN THIS INFORMATION IS AN UNDERSTANDING THAT ALL TYPES OF SPILLS ARE POTENTIALLY HAZARDOUS TO KARST REGIONS.

13. IDNR, IDEM AND USFWS PERSONNEL WILL MONITOR CONSTRUCTION AND MAINTENANCE TO THE AGREED UPON TERMS, AS DEEMED NECESSARY.

14. IF DURING CONSTRUCTION IT IS FOUND THAT THE MITIGATION AGREEMENT MUST BE ALTERED, ALL OF THE AGENCIES WILL BE CONTACTED AND AGREEMENT REACHED PRIOR TO WORK CONTINUING IN THAT SPECIFIC AREA OF THE PROJECT. IN ORDER TO NOT UNDULY DELAY PROJECTS, A TWO WORKING DAYS RESPONSE TIME IS NEEDED FROM THE RESOURCE AGENCIES.

15. TREATMENTS WILL BE MAINTAINED DURING CONSTRUCTION BY MEANS OF A VISUAL INSPECTION ON A WEEKLY BASIS OR AFTER EVERY RAIN. CORRECTIVE ACTION WILL BE TAKEN AS NEEDED.

16. IF AFTER THE ABOVE PROCEDURE IS FOLLOWED AND A STATE/FEDERAL ENDANGERED/THREATENED SPECIES IS FOUND DURING CONSTRUCTION, WORK IN THAT AREA OF THE PROJECT WILL STOP. THE IDNR, AND USFWS WILL BE IMMEDIATELY NOTIFIED. THE IDNR AND USFWS WILL PROMPTLY INVESTIGATE THE SITUATION, ADVISE THE PROJECT ADMINISTRATOR AND ASSUME RESPONSIBILITY FOR PROTECTING THE ENDANGERED SPECIES AND TAKING THE APPROPRIATE ACTION.

17. THIS DOCUMENT WILL BE REVIEWED ANNUALLY OR MORE FREQUENTLY AT THE REQUEST OF ANY OF THE FOREGOING AGENCIES.

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